REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Formalities

The specification has been revised to correct minor grammatical and idiomatic errors. Because the changes are all formal in nature, it is respectfully submitted that the changes do not involve new matter.

2. Amendments to Claims

Claim 1 has been amended to positively recite the alternate and successive operation of the first and second switches, *i.e.*, the alternating on and off states of the transistors resulting from the fact that rising current at end point (c) raises the voltage across resistor R2 to turn on transistor 12, which in turn increases the current through resistor R1 and causes voltage at point (d) to drop, which turns off transistor 11, which causes a drop in voltage at (c), turning off transistor 12, and raising the base voltage of transistor 11, and so forth until the electric current of the dc power source is stable.

A description of the alternate and successive operation of the switches is found, for example, in lines 3-20 on page 7 of the original specification, and therefore the amendments to claim 1 do not involve new matter.

3. Rejection of Claims 1-7 Under 35 USC §103(a) in view of U.S. Patent Nos. 5,225,751 (Kusano) and 5,337,208 (Hossner)

This rejection is respectfully traversed on the grounds that neither the Kusano patent nor the Hossner patent discloses or suggests, whether considered individually or in any reasonable combination, a current limiter for a motor that operates by **alternating** and **successive** actuation of switches connected to resistors in the manner claimed.

According to the claimed invention, as noted above, the two switches are arranged, when an overcurrent passes through a brushless dc motor, to alternately turn the motor control circuit on and off until a stable motor current is achieved, while at the same time positively limiting the turn on current. In a conventional motor, pulses are applied by a microprocessor for short periods and operation of the motor is sensed to determined whether the pulses should be discontinued. If the motor does not start during repeated application of pulses by the microprocessor, overheating can occur (even if the application of pulses is only a for a short period). In the claimed invention, on the other hand, the instantaneous motor current is **never** permitted to exceed a predetermined limit even during repeated attempts to start the motor because, as soon as the current is exceeded, transistor 12 turns on to shunt the excess current and at the same time shut of the current to the motor control circuit via transistor 11. There is no equivalent function in the motor control circuits disclosed in either of the applied references.

In particular, the Kumar patent discloses a constant voltage power supply circuit for a motor, in which the initial rise in current is controlled by capacitor 4 and overcurrents are dissipated in resistor 6 rather than being limited by the alternating actuation of two switches in the manner claimed. The Examiner is incorrect that transistors 5 and 12 of Kumar correspond to the claimed transistors. These transistors do not operate in a manner analogous to that of the claimed transistors, *i.e.*, transistors 5 and 12 are not alternately actuated in the manner claimed to cut-off the motor supply when an overcurrent occurs. Instead, when switch 1 of Kumar is closed, the motor is constantly supplied with current through transistors 5 and 12, the resistor 6, capacitor 4, and zener diode 8 operating to maintain a stable voltage and prevent current inrush *without* repeated cut-off of the current supply. None of the transistors disclosed by Kumar switches off in response to an overcurrent, much less in response to the switching on of another transistor connected between base and emitter (or collector) of the first transistor, and therefore none of the transistors of Kumar can possibly correspond to the claimed first and second switches.

This deficiency is not made up for by the Hossner patent, which discloses an AC current limiter that uses sensing diodes to switch on shunt transistors. The two shunt circuits of Hossner do not turn the motor supply on and off, but to the contrary are connected to limit current flowing in opposite directions, *i.e.*, during the positive and negative half-cycles of the AC current. **This has nothing to do with the DC inrush current prevention of Kusano**, which simply limits current when a switch 1 is closed, and nothing to do with the claimed invention, in which a DC motor control current is repeatedly and alternatingly cycled on and off when an overcurrent occurs to permit safe restart during a jam or abnormal operation. While it is true that the transistors of Hossner have interconnected bases and collectors/emitters, that is all that they have in common with either the claimed invention or the circuit of Kusano.

Because the bias circuits of the transistors of Hossner are such that they do not operate in successive alternating fashion in the manner of claimed invention (the Examiner will note the completely different connection of the resistors), are not suitable for limiting DC rather than AC currents, and have no obvious applicability to the DC circuit of Kusano, which uses a capacitor and resistor to limit currents, it is respectfully submitted that the rejection of claims 1-7 under 35 USC §103(a) is improper and should be withdrawn.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

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